

# PATENT COOPERATION TREATY

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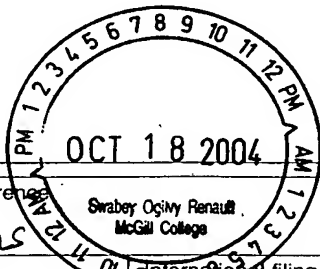
PCT

REPLY TO:

WRITTEN OPINION

(PCT Rule 66)

**DUE ON DEC 12 2004**



Date of mailing  
(day/month/year)

12.10.2004

REPLY DUE

within 2 month(s)  
from the above date of mailing

Applicant's or agent's file reference  
913528185PCT KENT DANIELS

International application No.  
PCT/CA 03/01044

International filing date (day/month/year)  
11.07.2003

Priority date (day/month/year)  
03.10.2002

International Patent Classification (IPC) or both national classification and IPC  
H04B10/18

Applicant  
NORTEL NETWORKS LIMITED et al

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.
 

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis. For an informal communication with the examiner, see Rule 66.6.

**If no reply is filed,** the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 03.02.2005

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**I. Basis of the opinion**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

**Description, Pages**

1-27 as originally filed

**Claims, Numbers**

1-48 as originally filed

**Drawings, Sheets**

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |        |                           |
|-------------------------------|--------|---------------------------|
| Novelty (N)                   | Claims | 1-48: yes                 |
| Inventive step (IS)           | Claims | 1-5,14-18,29,34-37,44: no |
| Industrial applicability (IA) | Claims | 1-48: no                  |

**2. Citations and explanations****see separate sheet**

Reference is made to the following documents:

D1: US 2002/018268 A1 (MEEKER DEREK W ET AL) 14 February 2002 (2002-02-14)

D2: US-A-5 446 574 (EGNELL LARS ET AL) 29 August 1995 (1995-08-29)

V.

1. The document D1, which is considered to be the closest prior art, discloses a method and system for transmitting information via optical signals comprising the following steps and features set out in claims 1 and 14:

- deriving a compensation function that substantially mitigates the dispersion imparted to the communications signal by the optical communications system (see Pg.3, paragraph 39 and Pg.4, paragraphs 44-57),

- distorting an electrical input signal using the compensation function to generate a predistorted electrical signal (see Pg.3, paragraph 40 and Pg.4, paragraph 59 and Fig.8),

- modulating an optical signal using the predistorted electrical signal to generate a corresponding predistorted optical signal for transmission through the optical communications system (see Pg.4, paragraph 59 and Fig.8).

The subject-matter of claims 1 and 14 therefore differs from this known D1 in that the distortion of the electrical input signal is carried out by a **compensation processor**. However, implementing the compensating function in software (e.g. by a digital filter using a DSP processor) instead of hardware (see D1: paragraphs 45-56) does not add any inventive subject-matter because it is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

Thus, the present application does not meet the requirements of Article 33(3) PCT because the subject-matter of claims 1 and 14 does not involve an inventive step.

2. Also document D2 (see col.5, lines 6-68), if not disclose, at least render the

subject-matter of claims 1 and 14 obvious.

3. Independent product claim 34 compared to claim 14, presents the following differences:
- the particularization that the "compensation processor" is a **digital filter** which not only generates a predistorted electrical signal based on the electrical input signal and the compensation function (as in claim 14) but also additionally calculates successive digital sample values of the predistorted electrical signal,
  - the additional feature of a **digital-to-analog converter (DAC)** for converting each successive digital sample value into a corresponding analog level of the predistorted electrical signal.

However, the particularization of using a **digital filter** as a compensation processor is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. The use of an additional **digital-to-analog converter (DAC)** it is a matter of normal design procedure.

Thus, claim 34 does also not involve an inventive step (Article 33(3) PCT).

4. The following dependent claims do not appear to contain any additional features which, in combination with the features of **claims 1 or 14 or 34** to which they refer, could form subject matter which meets the requirements in respect of novelty (Article 33(2) PCT) or inventive step (Article 33(3) PCT), the reasons being as follows:

**Claims 2, 3, 16, 17:** the additional features are already known from D1 (see Pg.2, paragraphs 16-17).

**Claims 4, 15, 18, 29, 44:** the additional features of these claims are a matter of normal design procedure.

**Claims 5, 35:** the option to use a digital filter (FFT, FIR, IIR) for processing the electrical input signal instead of a filter implemented in hardware as shown in D1 (see paragraphs 44-56) is a matter of normal design procedure.

**Claims 36, 37:** the additional features are already known from D1 (see Pg.4, paragraph 60).

5. It is not at present apparent which part of the application contains subject-matter which involves an inventive step and which could serve as a basis for amended claims. Should the applicant nevertheless regard some particular matter as involving an inventive step, an independent claim should be filed taking account of Rule 6.3(b) PCT (two-part form). The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.

**Certain observations on the international application**

The following claims do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined, the reasons being as follows:

a) In claim 34, the technical feature "a digital filter for calculating successive digital sample values of the predistorted electrical signal, based on the electrical input signal and the compensation function" is not clear. It seems that the technical features introducing the "compensation function" and the "predistorted electrical signal" are missing.

b) Although claims 14 and 34 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extend of the protection.

In fact, claim 34 seems to comprise all the features of claim 14 and is therefore not appropriately formulated as a claim dependent on the latter (Rule 6.4 PCT).

c) The relative term "substantially" used in claims 1, 9 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claims unclear.

**Certain defects in the international application**

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents D1 to D2 is not mentioned in the description, nor are these documents identified therein.
3. If amended claims are filed, the description should be adapted accordingly.
4. The applicant is requested to file amendments by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. In particular, fair copies of the amendments should be filed preferably in triplicate.

Moreover, the applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

5. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT).

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.